



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

21-08-06

Log Event A

Borehole Information

Farm : <u>BX</u>	Tank : <u>BX-108</u>	Site Number : <u>299-E33-151</u>
N-Coord : <u>45,456</u>	W-Coord : <u>53,454</u>	TOC Elevation : <u>655.50</u>
Water Level, ft :	Date Drilled : <u>1/31/1972</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

Borehole 21-08-06 was drilled in January 1972 to a depth of 100 ft with 6-in. casing. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. The drilling log makes no mention of perforations or grouting; therefore, it is assumed that the borehole was not perforated or grouted. The top of the casing, which is the zero reference for the SGLS, is approximately 0.5 ft below the ground surface inside a plastic valve box.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1997</u>	Calibration Reference : <u>GJO-HAN-14</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>08/14/1997</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>99.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>26.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>08/15/1997</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>27.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>0.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

21-08-06

Log Event A

Analysis Information

Analyst : A.W. Pearson

Data Processing Reference : MAC-VZCP 1.7.9

Analysis Date : 11/25/1997

Analysis Notes :

This borehole was logged by the SGLS in two log runs. The pre-survey and post-survey field verification spectra for all logging runs met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from the accepted calibration spectrum that most closely matched the field data were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

Cs-137 and Co-60 were the only man-made radionuclides detected in this borehole. Cs-137 contamination was detected at concentrations less than 1 pCi/g from the ground surface to 8 ft, 9.5 to 10 ft, 11 to 15 ft, and 18.5 to 19.5 ft. Co-60 contamination was detected at 66.5 ft with a concentration of approximately 0.15 pCi/g.

The K-40 concentrations gradually increase from about 43 to 46.5 ft and decrease from 90 to 92 ft. The U-238 concentration increases sharply at 16 ft from a background of 0.6 pCi/g to about 1 pCi/g and remain elevated to the bottom of the logged interval.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks BX-107 and BX-108.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

A plot of selected historical gross gamma logs from 1975 to 1992 is included, as well as a plot comparing the decrease in activity recorded in the historical logs to a calculated decay curve for Ru-106.